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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/578,149

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EXAMINER

BARROW, AMANDA J

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/578,149	<b>Applicant(s)</b> SLIVAR, DJURO	
	<b>Examiner</b> AMANDA BARROW	<b>Art Unit</b> 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 29 March 2010.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 2-5 and 7-19 is/are pending in the application.
- 4a) Of the above claim(s) 7-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-5 and 17-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)         | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

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## **DETAILED ACTION**

### ***Status of Application***

1. The Applicant's amendment filed on 3/29/2010 was received. Claim 1 and 6 have been cancelled. Claims 2, 4 and 5 have been amended. Claims 17-19 have been newly added.

2. The texts of those sections of Title 35, U.S.C. code not included in this action can be found in the prior Office Action issued on 10/29/2009.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claim 19 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claim recites that, "...said separator bottom part provides an electrical insulation with regard to a cylindrical cell in which it is inserted without a need for any additional disc-shaped insulating element close to the inner surface of said bottom part." There is no support in the specification for this language. Appropriate correction is required.

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5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 17-19 and 2-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "slightly curved" in independent claim 17 is a relative term which renders the claim indefinite. The term "slightly " is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

The term "slightly outwardly curved shape" in claim 18 is a relative term which renders the claim indefinite. The term "slightly" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

For compact prosecution purposes, as long as the separator of the prior art has an inclined surface relative to the bottom of the separator as shown in the drawings, the prior art will read on the claims.

***Claim Rejections - 35 USC § 102/103***

7. The claim rejections under 35 U.S.C. 102(b) as being anticipated by, or in the alternative under 35 U.S.C. 103(a) as obvious over Haruhisa et al. (JP Patent Publication 07245091) are withdrawn as the claims have been amended or cancelled.

***Claim Rejections - 35 USC § 102***

8. Claims 17-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamashita et al. (US Patent 6,270,833).

Regarding claim 17, Yamashita discloses a separator for an alkaline cell and a method of producing same. Yamashita teaches that the separator base paper 21 is rotated in the horizontal direction by a mandrel to form a cylindrical formation of three windings and then the cylindrical formation was subject to a heat bonding at side and bottom portions to form a cylindrical structure with a closed end (column 4, line 66 through column 5, line 5). The base paper 21 is made of vinylon fiber/rayon fiber/vynilon binder (i.e., a "non-woven" sheet material"). As illustrated in Figures 5C and 5D, the bottom part of the cylindrical separator is formed by an extension of cylindrical body 22. Yamashita teaches that a semi-spherical bottom portion 22a is formed into the cylindrical body 22 and Figure 5D illustrates its wrinkle-free continuous inner and outer surfaces. The dotted line of cylindrical separator 22 in Figure 5D indicates the uniform thickness of the separator.

Regarding claim 18, Yamashita illustrates that the bottom part 22a of cylindrical separator 22 has a slightly outward curved shape (see Figure 5D). Yamashita also refers to the bottom portion 22a as the "semi-spherical bottom portion" (column 7, line 65 through column 8, line 2).

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Regarding claim 19, Yamashita teaches that the separator prevents short circuit within the cell (i.e., "provides electrical insulation") with regard to cylindrical cell 1 in to which it is inserted in order to electrically insulate the anode 5 and cathode 3 (see Figure 1; column 2, lines 63-67 and column 1, lines 6-34). Yamashita does not provide any additional disc-shaped insulating element close to the inner surface of the bottom part 22a of the cylinder (see Figure 1).

***Claim Rejections - 35 USC § 103***

9. The claim rejections under 35 U.S.C. 103(a) as being unpatentable over Haruhisa et al. (JP Patent Publication 07245091) in view of Devitt et al. (US Patent 3,897,266) on claim 3 is withdrawn as the claims have been amended or cancelled.

10. The claim rejections under 35 U.S.C. 103(a) as being unpatentable over Haruhisa et al. (JP Patent Publication 07245091) in view of Daniel-Ivad et al. (US Patent 6,361,899) and Tomantschger et al. (US Patent 5,300,371) are withdrawn as the claims have been amended or cancelled.

11. Claims 2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamashita et al. (US Patent 6,270,833) as applied to claims 17-19 above, and further in view of Haruhisa et al. (JP Patent 07245091) and Gozdz et al. (US Patent Application 2002/0110728).

Regarding claim 2, Yamashita teaches that the base paper 21 is made of vinylon fiber/rayon fiber/vinylon binder (i.e., "a non-woven sheet") (column 4, line 66 through column 5, line 5). Yamashita does not disclose whether or not the separator base paper 21 consists of a

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plurality of sheets; however, Haruhisa discloses analogous art of providing a cylindrical separator out of non-woven sheet material for use as an insulating element in a battery (abstract). Haruhisa discloses that the separator material sheet 31 of nonwoven fabric consists of multiple layers which are then wound to form a cylindrical separator 32 (abstract and paragraph 8). There is no use of binder in the winding process, and thus, the sheets are wound together without any binder as recited in the claim (see paragraph 8).

Therefore, it would have been obvious to a person of ordinary skill to modify the non-woven sheet material used as separator base material 21 of Yamashita to include a layered structure of multiple non-woven cloths because Haruhisa discloses analogous art in which the separator base material 31 that forms the cylindrical separator consists of a layered sheet structure and that the separator made provides stable production and a quality product (paragraph 15) as well as prevention of separator breakage (paragraph 12).

Furthermore, it is advantageous to configure a plurality of separator sheets wound together without the use of binder as taught by Haruhisa because it is well known in the art, as taught by Gozdz, that binder clogs the pores of separator sheets leading to an alteration in the microporous structure and a general decline of electrolyte flow through the separator (paragraph 12). Furthermore, the application of binder also unproductively increases the cell mass, thus lowering its effective energy storage capacity (paragraph 12).

Therefore, it would have been obvious to a person of ordinary skill to modify the non-woven sheet material used as separator base material 21 of Yamashita to include a layered structure of multiple non-woven cloths that uses no binder because Haruhisa discloses this configuration and Gozdz teaches that the application of binder clogs pores leading to a local

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filling of the micropores of the separator and a decline in flow through the separator as well as an increase in the cell mass leading to a lowered effective energy storage capacity (paragraph 12).

Regarding claim 4, Yamashita teaches that the base paper 21 is made of vinylon fiber/rayon fiber/vinylon binder (i.e., "a non-woven sheet") (column 4, line 66 through column 5, line 5). Yamashita does not disclose whether or not the turns are affixed to each other with binder; however Haruhisa discloses analogous art of providing a cylindrical separator out of non-woven sheet material for use as an insulating element in a battery (abstract). Haruhisa discloses that the separator material sheet 31 of nonwoven fabric consists of multiple layers which are then wound to form a cylindrical separator 32 (abstract and paragraph 8). There is no use of binder in the winding process, and thus, the sheets are wound together without any binder (see paragraph 8).

Therefore, it would have been obvious to a person of ordinary skill to modify the non-woven sheet material used as separator base material 21 of Yamashita to include a layered structure of multiple non-woven cloths that does not affix the sheets with any binder material because Haruhisa discloses analogous art in which the separator base material 31 that forms the cylindrical separator consists of a layered sheet structure which is wound together without the use of binder and teaches that the separator made provides stable production and a quality product (paragraph 15) as well as prevention of separator breakage (paragraph 12).

Furthermore, it is advantageous to configure a plurality of separator sheets wound together without the use of binder as taught by Haruhisa because it is well known in the art, as taught by Gozdz, that binder clogs the pores of separator sheets leading to an alteration in the microporous structure and a general decline of electrolyte flow through the separator (paragraph



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12). Furthermore, the application of binder also unproductively increases the cell mass, thus lowering its effective energy storage capacity (paragraph 12).

Therefore, it would have been obvious to a person of ordinary skill in the art to modify the winding of the separator without the use of binder because Haruhisa discloses this configuration and Gozdz teaches that the application of binder clogs pores leading to a local filling of the micropores of the separator and a decline in flow through the separator as well as an increase in the cell mass leading to a lowered effective energy storage capacity (paragraph 12).

12. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamashita et al. (US Patent 6,270,833) in view of Haruhisa et al. (JP Patent 07245091) as applied to claim 2 and 4 above, and further in view of Devitt (US Patent 3,897,266).

Regarding claim 3, modified Yamashita teaches that the separator material sheet 31 is made of layers of either woven or nonwoven fabric (i.e., two semi-permeable membranes), but does not disclose the addition of cellophane to the separator material sheet 31. Devitt discloses analogous art of an alkaline battery cell which contains a separator for preventing the metallic conduction between opposite polarity electrode plates (column 4, lines 43-45). Devitt discloses that conventional non-woven porous separators generally lack uniformity, are overly porous and readily allow and promote growth of zinc dendrites through the porous interstices (column 5, lines 31-40). Devitt teaches that preferred materials are cellulosic materials as they resist attack by electrolyte and are resistant to oxidation and have suitable ranges for air permeability and electrolyte absorption; however, cellophane lacks mechanical strength to properly conform to the contour of the zinc plate (column 5, lines 1-16 and lines 29-31). Thus, Devitt discloses that the

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separator used in the invention is a cellophane membrane next to the non-woven porous fabric separator such as Pellon and that this layering of the cellophane and non-woven fabric membranes attenuates dendritic growth and prevents metallic conduction between the positive and negative plates (column 5, lines 50-55). Devitt does not disclose the use of any binder between the sheets.

Therefore, it would have been obvious to a person of ordinary skill in the art to modify the separator layer of modified Yamashita to include a layer of cellophane in addition to the multi-layered separator sheet because Devitt teaches that this attenuates dendritic growth and prevents metallic conduction between positive and negative plates (Devitt, column 5, lines 50-55).

13. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamashita et al. (US Patent 6,270,833) as applied to claims 17-19 above, and further in view of Tomantschger et al. (US Patent 5,300, 371).

Regarding claim 5, Yamashita does not disclose a thermoplastic sealant arranged at the central zone on the outside of said bottom part 22a; however, Tomantschger discloses an alkaline cell in which a thermoplastic sealant may be applied to the bottom of the separator to prevent electrical contact between the negative electrode 14 and the cell container or can 12(column 13, lines 1-9).

Therefore, it would have been obvious to a person of ordinary skill in the art to modify the cell of Yamashita to include a thermoplastic sealant at the central zone on the outside of the

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bottom part as taught by Tomantschger in order prevent electrical contact between the negative electrode and the cell container (Tomantschger, column 12, lines 1-9).

***Response to Arguments***

14. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AMANDA BARROW whose telephone number is (571)270-

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7867. The examiner can normally be reached on 7:30am-5pm EST. Monday-Friday, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on 571-272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/AMANDA BARROW/  
Examiner, Art Unit 1795

/Dah-Wei D. Yuan/  
Supervisory Patent Examiner, Art Unit 1795